Temporal variation in zebra vigilance behaviour in Hell's Gate National Park

Abstract

Temporal variation in the vigilance behaviour of the plains zebra, *Equus burchelli*, was studied in Hell's Gate National Park from early morning to sunset over a four day period. Significant difference in vigilance (as measured by approach distance) was found between midday and morning/evening. Zebras were found to form tighter groups in the morning and evening as opposed to midday. No difference in vigilance behaviour (as measured by head up) was found between group and solitary zebra. Zebras spent more time with their head up in the midday and spent more time feeding in the morning and evening. In the midday zebra have more opportunity to keep and eye on potential predators while in the morning and evening they will flee at the first sight of a potential threat.

Emily Stecker, University of Florida, USA

Maria Olsen, University of Lund, Sweden

1999

Grazing behaviour of medium-sized herbivores: a comparison between Thomson's Gazelle, Grant's Gazelle and Warthog

Abstract

The grazing behaviour and feeding selectivity of three similar-sized species of herbivores occupying the same habitat were measured in Hell's Gate National Park, Kenya. Studied species were Thomson's Gazelle, Grant's Gazelle and Warthog, all three of these species are mainly grazers of open savanna grass lands.

Smaller animals are expected to be more selective than larger animals. A difference was found in feeding selectivity between Warthogs and Gazelles, the Warthogs being less selective, probably because of their broader mouth. Warthogs can handle more coarse food and therefore do not need to be very selective. No difference was found between the gazelles. A trend was found within Grant's Gazelles and Warthogs that females are more selective than the (larger) males. It is very likely that the drought (2000) and consequent low vegetation cover caused there to be few differences between animals.

Katja Kiviaho, University of Helsinki, Finland

Sandra van der Graaf, University of Groningen, Netherlands

2000

Vigilance behaviour and group size of Grant's Gazelles in Hell's Gate National Park

Abstract

Grant's Gazelle (*Gazella granti*) group together in a variety of compositions. We wanted to compare vigilance behaviour between different group types in the dry season (July 2000) in Hell's Gate National Park, Kenya. Group structure was found to be unstable. The study showed that vigilance behaviour did not follow the classic theory that overall vigilance decreases with increasing group size, but in fact the opposite. Larger groups tended to have closer nearest neighbours than small groups. Groups with calves were more tightly knit than groups without, but there was no difference in vigilance between groups with and without calves.

Patricia Townsend, University of Florida

Daniel Wood, University of Edinburgh

2000

Group size in Grant's Gazelle: a trade-off between vigilance and food competition?

Abstract

Living in a group is a trade-off between increased vigilance and more competition for food. The aim of this study was to determine the optimal group size of Grant's Gazelle in Hells Gate NP, Kenya. Reduced time spent on scanning was seen as a benefit and more movement as a cost. Overall subgroup size had a significant impact on the time spent on vigilance. Sex and group type, Breeding or Bachelor, were significant confounding factors. No clear optimal group size was determined. Several explanations for this have been provided. Future research should take overall group behaviour into account.

David Tumusiime Mwesigye, Makerere University, Uganda

David Jansen, Wageningen University, Netherlands

2004

The impact of animals on the grassland vegetation around waterholes in Hell's Gate National Park, Kenya

Abstract

This paper studied the disturbing impacts of animals in Hell's Gate National Park on the grassland vegetation especially around the waterholes. Species of animals showed no time preference for drinking water and there was no serious competition for the water. Buffalos were found to show some interference competition, considered mild. Animals' impact on the vegetation was investigated by the study of two functional waterholes, 1 dry waterhole and a control area. The percentage grass cover, the percentage of lawn, bunch and woody species were measured on 1 m^2 quadrats every 10 m along 300 m transects. The numbers of dung heaps per species were noted along transects. The lower grass cover and grasses height just near waterholes better expressed the impact of animals. These results are important when considering the management of Hell's Gate National Park.

Etotepe A. Sogbohossou, University of Abomey-Calavi, Benin

Jacqueline A. Mbeneya, Frank-link Associates, Cameroon

2004

Mechanisms of co-existence between Grant's Gazelles (*Gazella granti*) and Thomson's Gazelles (*Gazella thomsoni*) in Hell's Gate National Park, Kenya

Abstract

This study investigated the mechanisms of co-existence between Grant's and Thomson's gazelles, in Hell's Gate National Park. Results show that there is a partial partitioning in resource use between the two species. Greater selectivity in resource use was found for the Thomson's gazelles. Grant's gazelle's overlap Thomson's niche by 47% while Thomson's gazelles overlap Grant's niche by 52%. In the face of adverse environmental conditions (such as drought), Thomson's gazelles seem to be the better competitor because they are not water limited.

Amusa Tajudeen Okekunle, University of Ibadan, Nigeria

Wilfred Paul, Sokoine University of Agriculture, Tanzania

2004

Rolling behaviour in the plains zebra (*Equus burchelli)*

Abstract

This study looked at the rolling behaviour of plains zebras *(Equus burchelli)* and the hypotheses that might explain this behaviour. Research was done by observing zebras in the valley bottom grassland of Hell's Gate National Park. Males turned out to roll more than females, while they seem to be less irritated by flies. A positive relationship between temperature and rolling was found. However, based on the number of tail flicks, we believe the most likely explanation for rolling behaviour of zebras is that zebras they do it to repel insects. An effect of on looking zebras could not be found. We disapprove the hypothesis that rolling is a social display (possibly in mate choice) that only males employ.

Elske Schut, Rijksuniversiteit Groningen, The Netherlands

Sarah Cowhey, National University of Ireland, Dublin, Ireland

2004

What is limiting the zebra population in Hell's Gate?

Abstract

Hell's Gate National Park in Kenya, Africa, supports a large density of ungulates. Zebra (*Equus burchelli*) dominate the ungulate community representing the highest biomass in the park. It is believed that this park offers a lot of resources and is predator free. Compared with other ecosystems, one would expect to find a growing population of zebra and a demographic structure reflecting a resource-rich predator free environment. As a comparison to a predator-limited population, we contrasted the Hell's Gate zebra population with the Serengeti zebra population. We show that the Hell's Gate population has a similar growth rate and age structure as the Serengeti population indicating the Hell's Gate population is in fact limited. We conclude the most likely cause of limitation is predation rather than resources though further study and data on survival rates and predator presence would be needed to support these findings.

Jennie Hügert, Lund University, Sweden

Sedra Shapiro, San Diego State University, USA

2004

Seasonal habitat use and preference by grazing herbivores in Hell's Gate National Park, Kenya

Abstract

Studying habitat utilization is the first step in understanding species co-existence. We are proposing to assess the seasonal changes of habitats use by grazer herbivores in the savannah of Hell's Gate National Park, Kenya. 10 counts compared to data from the wet season have allowed us to assess the following: Species diversity is lower in dry season due to the dominance of zebras. The most used habitat in dry season is Short Open Grassland, whilst in wet season, it is Medium Open Grassland. There is a greater overlap in habitat use during the dry season. Limitations in the resources oblige animals to gather around waterholes and feed on the same grassland. We would need to study more in detail the dietary overlap to determine the mechanisms of co-existence on these grasslands.

Stephanie Channeliere, Royal Botanical Garden, Kew, London

Nicole Inauen, University of Basel, Switzerland

2006

Changes in Plains Zebras, *Equus burchelli* anti-predatory behaviour within three different habitats in Hell's Gate National Park

Abstract

This study looks in to the changes in anti-predatory behaviour in the Hell's Gate plain zebra, *Equus burchelli*, according to habitat type. Using a transect line including three different habitat; open grassland, woodland and around waterhole. Studying the differences in behaviour, data is presented on group size, intra-group spacing and vigilance for the different habitats in Hell's Gate NP. Kenya. Group size was found to conform to known theories about zebra social organisation. The study findings showed that group size was constant in woodland and open grassland, but larger groups were found at the waterholes due to increased interaction between groups. Intra-group spacing, IGS, showed a clear trend that largest IGS was found in the woodland and the smallest IGS was at the waterholes. Changes in vigilance were observed between the different habitats and followed expected patterns.

Jonatan Hammar, University of Gothenburg, Sweden

Masumi Gudka, University of East Anglia, United Kingdom

2006

Foraging behaviour of giraffe, *Giraffa camelopardalis tippelskirchi,* in Hell's Gate National Park

Abstract

The foraging behaviour of giraffes, *Giraffa camelopardalis tippelskirchi*, and the differences between forage behaviour in male and female giraffes was studied in Hell's Gate National Park, between the 14th and 21st August, 2007. Seven and a half hours was spent each day (08:00-12:00 and 15:00-18:00) observing the amount of time giraffe foraged at, the species of tree it browsed on, the forage height it fed at, and the differences in the age classes of giraffe. No significance was found in the % activity records between adult males, adult females, juveniles, and calves. *Acacia drepanolobium* was found to be the most heavily browsed forage species for most age classes of giraffe. Foraging was found to occur most heavily in forested areas.

Fiona Curran Cournane, National University of Ireland, Galway

Emily Lodge, University of Sheffield

2007
